SEVERE LOCAL STORMS, JANUARY, 1930

The table herewith contains such data as have been received concerning severe local storms that occurred during the month. A more complete statement will appear in the Annual Report of the Chief of Bureau

Place	Date	Time	Width of path, yards	Loss of life	Value of property destroyed	Character of storm	Remarks	Authority
Texas (north-central)	7-9					Rain, sleet, and snow.	Overhead wires damaged, traffic delayed, numerous accidents; livestock suffered from severe cold; barley and wheat killed.	Official, U. S. Weather Bureau.
Illinois (southern half), Indiana, and northern Ohio.	8-9					Severe sleet	Power, telephone, and telegraph lines damaged; travel difficult and dangerous; fruit trees broken.	Do.
Cairo, Ill.	13	11:48 p. m.	100			Thundersquall	Garage and 2 small houses demolished	Do.
Austin, Tex., and vicinity	19-21					Ice	Travel difficult; temporary suspension of bus traffic.	Do.
Dallas, Tex., and vicinity	21					do	Considerable loss of property	Do.
Port Arthur, Tex. (off coast).	28-29	Night		14		Severe squall	Tug sank; entire crew lost	Do.

RIVERS AND FLOODS

By R. E. SPENCER

In a discussion received too late for inclusion in the December REVIEW, the losses resulting from the moderate Wabash system flood of that month are reported as follows:

Tangible property	$700
Crops, prospective and matured	67, 000
Suspension of business	8, 950
	76, 650
Property saved through Weather Bureau flood warnings	37, 500

In January the only floods of consequence were those in the Wabash-White system of Indiana, and the St. Francis River of Arkansas.

Weather conditions immediately preceding the Wabash-White flood were particularly favorable to its inception. During late December, snow had accumulated in depths ranging from 3 to 6 inches over the White Basin to as much as 18 inches in parts of the upper Wabash Valley. Run-off from this snow cover, already in evidence in the rising streams at the close of December, was considerably increased by the high temperatures of January 1 and 2, and greatly augmented by moderate to heavy but rather irregularly distributed rains on the latter date. The result was that flood stages were reached at all stations on the Wabash proper during the first six days of January. The period from the 2d to the 6th was largely without rainfall, and at stations as far down as Covington, Ind., the river fell somewhat; but beginning with the 6th–7th and continuing (with a 24-hour intermission on the 10th) until the 14th, moderate to heavy rains were again general. In the first four days of this period the rainfall averaged about 2.60 inches over the upper half of the Wabash Valley, and about 2.90 inches over the lower half, while the average over the entire White Basin was slightly in excess of 3.00 inches.

The resultant flood, already of serious character before the cessation of the rain, was substantially checked by the sharp temperature drop of the 15th; but destruction of a severe and extensive character had already occurred. Except at Vincennes on the Wabash, and at Decker on the White, where the stages exceeded by 1.2 feet and 0.2 foot, respectively, the previous high water records, the crests reached this month were lower by substantial amounts than those of the great flood of 1913; but ice gorges were frequent—the two most important of which formed at Mackey Ferry, south of New Harmony, and at Riverton, between Terre Haute and Vincennes; and levee breaks were numerous, and overflow very extensive. Specific details are not yet available of the damage done to farms, highways, bridges, railroad property, etc.; a further discussion on this point will appear in the February REVIEW.

An important feature of the flood was the suffering caused by the pronounced cold which prevailed following the 14th. Refugees, caught in the upper stories of houses or driven from lowland farms and communities, remained isolated, inadequately sheltered, and without food or fuel, for comparatively long periods in which temperatures remained near zero, and during which rescue was rendered especially difficult by the freezing of the surrounding water.

Flood warnings, the issue of which was begun as early as December 26, and continued as necessary, were of a high order of accuracy even in spite of the difficulty imposed by levee breaks. No estimate of their monetary value has yet been made.

The moderate floods of the Lake Erie drainage and the interior rivers of Ohio were caused by the same general weather conditions as was that in the Wabash system. In the Maumee system losses, including that due to suspension of business, amounted to about $35,000; and considerable inconvenience was caused—along the St. Marys, St. Joseph, and lower Auglaize Rivers—by the flooding of homes and business houses.

The floods in Ohio were not particularly important.

Along the Green River of Kentucky and the lower Ohio River the major damage was to matured crops; and a second important loss was that due to damage to farm fences—the recession of water from overflowed lands, occurring after widespread freezing, having left deposits of ice upon the fences heavy enough over many miles of extent to break them down. Losses along the Green amounted to about $23,000, of which $20,000 was in matured crops; and $29,000 was reported saved through the Weather Bureau warnings. The total of losses on the lower Ohio was $178,500, distributed as follows:

Tangible property (chiefly fences)	$36, 600
Matured crops	124, 800
Livestock and other movable property	900
Suspension of business	16, 200
Savings effected by Weather Bureau flood warnings	63, 000

In the St. Francis River Basin, the flooding, which resulted from heavy rainfall in the upper St. Francis and Little River Basins on January 2 and from the 7th to the 14th, was most extensive in Clay, Green, Craighead, and Mississippi Counties of Arkansas. Levee breaks occurred in these counties as follows:

One in the St. Francis River Levee, Arkansas side, near Nimmons, Ark., January 18, width 150 feet; 3 in the St. Francis River Levee, Arkansas side, north of Bertig, Ark., January 15, width 100 feet; 1 in the St. Francis River Levee, Arkansas side, north of Bertig, Ark., January 17, width 150 feet; 1 in Big Lake Levee, 10

miles west of Blytheville, Ark., and 6 miles south of the Missouri line, final width about 300 feet.

The total estimated overflow from these and other causes was 126,500 acres—11,500 from the Clay and Green County levee breaks, 10,000 in Craighead County from overflowing drainage ditches, 40,000 in Craighead County from overflow from St. Francis Lake, and 65,000 in Mississippi County from the Big Lake Levee break.

Owing to the severe cold which prevailed during the flood, considerable distress was experienced by refugees—many of whom were marooned for several days. It is estimated that 800 families were forced by the overflow to leave their homes.

Of the remaining floods of this month, that in the Black and White Rivers of Arkansas caused little loss except the costs of removing stock from lowlands, securing rafts and boats, repairing levees and highways, and replacing a few small bridges; that in the Mississippi was of no especial importance; and that in the Ouachita resulted in little or no direct damage but some inconvenience and loss on account of suspended business. Report on the Tallahatchie River flood will appear in the REVIEW for next month.

Flood stage and crest data are given in the following table:

[All dates in January unless otherwise specified]

River and station	Flood stage	Above flood stages—dates		Crest	
		From—	To—	Stage	Date
ATLANTIC DRAINAGE					
Pedee:	*Feet*			*Feet*	
Mars Bluff, S. C.	17	18	25	18.3	21
Poston, S. C.	18	22	27	18.9	24
Black: Kingstree, S. C.	12	24	26	12.2	25
Santee:					
Rimini, S. C.	12	17	(1)	13.9	23
Ferguson, S. C.	12	(2)	7	21.0	Oct. 7
		17	(1)	13.3	22-27
EAST GULF DRAINAGE					
West Pearl: Pearl River, La.	13	26	31	14.0	27
GREAT LAKES DRAINAGE					
Maumee:					
Fort Wayne, Ind.	15	2	19	22.2	15-16
		3	4	10.0	3-4
Napoleon, Ohio	10	9	10	11.0	9-10
		14	18	15.5	16
		2	----------	12.6	3
St. Joseph: Montpelier, Ohio	10	7	----------	12.2	8
		14	----------	11.8	16
Sandusky:					
		3	3	13.2	3
Upper Sandusky, Ohio	13	8	9	15.0	9
		13	14	14.1	14
		9	10	7.6	10
Tiffin, Ohio	7	13	15	9.0	14
		9	10	12.6	9
Fremont, Ohio	11	13	16	14.4	15
MISSISSIPPI DRAINAGE					
Allegheny: Lock 5, Freeport, Pa.	24	14	14	24.4	14
Ohio:					
Dam 47, Newburgh, Ind.	35	10	23	39.0	17
Evansville, Ind.	35	10	24	39.9	17-18
Dam 48, Cypress, Ind.	35	11	24	39.6	18
Dam 49, Uniontown, Ky.	35	11	27	43.6	21
Shawneetown, Ill.	35	11	27	45.8	19-21
Dam 50, Fords Ferry, Ky.	35	11	28	46.3	19
Dam 51, Golconda, Ill.	38	14	25	41.6	19
Shenango: Sharon, Pa.	9	13	16	10.4	14-15
Muskingum: McConnelsville, Ohio	22	14	17	24.3	15
Tuscarawas: Coshocton, Ohio	8	4	4	8.0	4
		9	18	14.0	15
Walhonding: Walhonding, Ohio	8	2	4	10.4	3
		8	16	13.0	9
Scioto:					
Larue, Ohio	11	2	3	11.8	3
		8	15	13.9	13
Prospect, Ohio	10	4	4	10.0	4
		9	17	13.9	15
		9	10	10.1	10
Bellpoint, Ohio	9	13	15	9.7	13
		20	20	9.0	20
Circleville, Ohio	10	3	4	10.9	4
		9	16	14.7	10
Chillicothe, Ohio	16	10	17	20.4	15
Olentangy: Delaware, Ohio	9	8	10	11.5	9
		13	14	10.2	13
MISSISSIPPI DRAINAGE—continued					
Miami:	*Feet*			*Feet*	
Sidney, Ohio	12	8	8	12.2	8
		13	14	12.2	13
Middletown, Ohio	15	8	11	18.0	10
		13	14	16.6	14
Stillwater: Pleasant Hill, Ohio	13	9	9	13.5	9
Green:					
Lock No. 4, Woodbury, Ky.	33	10	12	34.9	11
Lock No. 2, Rumsey, Ky.	34	10	22	39.6	16
Wabash:					
Bluffton, Ind.	11	4	4	11.0	4
		10	17	15.2	14
Logansport, Ind.	15	14	16	17.8	15
Lafayette, Ind.	13	2	19	24.0	16
Covington, Ind.	16	2	27	27.7	17
Terre Haute, Ind.	16	3	26	24.0	16
Vincennes, Ind.	14	6	27	25.2	17
Mount Carmel, Ill.	16	4	29	27.1	17
Tippecanoe: Norway, Ind.	6	1	16	6.4	14
White: Decker, Ind.	18	8	26	29.0	17
White, East Fork:					
Seymour, Ind.	10	8	17	14.5	10
Williams, Ind.	10	11	21	20.6	14
Shoals, Ind.	20	10	22	32.6	15
White, West Fork:					
Anderson, Ind.	12	8	15	14.9	14
Noblesville, Ind.	14	9	16	16.9	15
Indianapolis, Ind.	18	15	15	18.3	15
Elliston, Ind.	19	3	20	27.9	15
Edwardsport, Ind.	15	3	23	20.3	14, 18
Mississippi:					
New Madrid, Mo.	34	17	23	35.2	20
Vicksburg, Miss.	45	29	Feb. 6.	45.7	Feb. 3
Illinois:					
Morris, Ill.	13	22	25	13.4	23-24
Peru, Ill.	14	4	(1)	18.0	19-20
Havana, Ill.	14	23	31	14.1	25-30
Beardstown, Ill.	14	30	(1)	----------	----------
Pearl, Ill.	12	25	(1)	13.6	29-30
Meramec:					
Steelville, Mo.	12	15	15	12.5	15
Pacific, Mo.	11	13	17	19.0	16-17
Valley Park, Mo.	14	13	18	23.6	16
Bourbeuse: Union, Mo.	12	15	16	14.0	16
St. Francis:					
Chaonia, Mo.	22	8	10	24.4	8
		13	17	34.7	15
Fisk, Mo.	20	8	20	26.4	16
St. Francis, Ark.	18	8	27	26.5	18
Marked Tree, Ark.	17	15	(1)	18.6	[1] 27
Arkansas: Yancopin, Ark.	29	13	(1)	35.0	27-30
Petit Jean: Danville, Ark.	20	10	16	22.3	14
White:					
Calico Rock, Ark.	18	14	15	20.8	14
Batesville, Ark.	23	13	17	28.0	15
Newport, Ark.	26	14	20	29.7	17
Georgetown, Ark.	22	12	31	26.5	20-21
De Valls Bluff, Ark.	24	14	31	26.8	22-23
Clarendon, Ark.	30	19	29	31.0	23-24
Black:					
Leeper, Mo.	11	14	14	11.2	14
Williamsville, Mo.	11	14	----------	13.2	15
Poplar Bluff, Mo.	14	14	17	17.4	16
Corning, Ark.	11	4	31	14.8	20
Black Rock, Ark.	14	8	31	23.6	15
Cache: Patterson, Ark.	9	9	(1)	11.5	15
Tallahatchie: Swan Lake, Miss.	25	14	(1)	31.9	27-29
Ouachita:					
Arkadelphia, Ark.	12	8	15	20.4	10
Camden, Ark.	30	11	22	37.5	17

[1] Continued at end of month. [2] Continued from last month.

EFFECT OF WEATHER ON CROPS AND FARMING OPERATIONS, JANUARY, 1930

By J. B. KINCER

General summary.—The month of January, 1930, was noted for its severe weather, especially during the latter half in the Northwest, where temperatures for the two weeks ending on the 28th averaged 24° to 33° below normal. Early in the month seasonal farm work made fairly good advance and moisture conditions were generally satisfactory over the eastern part of the country, but portions of the West were dry. Winter grain fields were generally bare of snow, but toward the middle of the month good snows occurred. The warm weather the first part of the month aided planting and replanting of truck in the South, and improvement continued through the first part of the second decade. The latter part was noteworthy by reason of two severe cold waves which

overspread the Southwest, bringing record-breaking low temperatures to many parts, especially in Texas, where it was the most severe cold wave in 30 years. There was considerable damage to tender truck in this area as well as some injury to citrus in the lower Rio Grande Valley, but the extreme Southeast escaped severe harm and the cold did not penetrate to the Florida Peninsula. Winter grain crops were largely well protected during the severe weather, but there were some local reports of damage where there was no snow cover. Fruit buds were also reported injured, especially peaches in the Ozark region and the Ohio Valley. Outside operations were generally at a standstill due to the cold and mostly unfavorable conditions.

Small grains.—During the first part of the month the general condition of winter wheat was mostly satisfactory, except for local reports of flooding and heaving in the Ohio Valley. Good snows occurred toward the middle of the month, but some areas were bare, expecially in western Kansas and Texas; there were some reports of soil blowing in the former State. A light to ample snow blanket covered the far Northwest, while moisture was beneficial in other parts of the West.

During the severe weather of the last part of the month winter grain crops were mostly well protected by an adequate snow cover, except for some bare fields in the southwestern belt and reports of ice in Missouri and Oklahoma. There was much winterkilling in Texas, while oats were largely killed in Arkansas; much wheat was frozen to the ground in western Kansas. In the Southeast and East winter grains were in good condition, but in the Northwest there was some apprehension because of the scanty snow cover.

Miscellaneous crops.—Livestock conditions were generally satisfactory during the first part of the month, with some range open in the northern Rocky Mountain region, and range and water conditions were satisfactory in the Southwest. Toward the middle part of the month the wintry weather over the Great Plains and northern Rocky Mountains caused considerable deterioration of stock, with heavy feeding necessary. Additional snows extended the winter range in Colorado, while precipitation was beneficial in some western parts of the country.

The low temperatures and generally severe weather caused considerable shrinkage of livestock during the latter part of the month, but there were no widespread reports of losses. Heavy feeding was necessary generally over the great western grazing area, although the range was partly open locally, permitting some ranging. Shed lambing began during the latter part of the month in the Northwest, with good results in Idaho, but serious losses in Oregon.

Much truck was planted and replanted in the southern districts during the first part of the month, but there were reports of only fair condition of those crops which escaped the December freezes. The cold waves during the latter part of the month caused extensive damage to truck in the southern area, especially in Texas, where injury was reported south to the lower Rio Grande Valley. There were no extensive reports of harm in the more southeastern areas and the Florida Peninsula was generally free of damaging cold. Satisfactory conditions prevailed in the western trucking portions. Sugar cane grinding in Louisiana was abandoned about the middle of the month due to continued deterioration of the standing cane as well as acidity and decreasing sucrose. There were reports of extensive injury to peach buds in the Ozark regions of Missouri and Arkansas, with apple trees injured in Utah. Satsuma trees in Alabama that were not in healthy condition were also damaged or killed, while there was some injury to citrus in Texas. Citrus were good in most other portions; picking navels and avocados had been suspended in California due to rains, but this work was resumed at the close of the month.

WEATHER OF THE ATLANTIC AND PACIFIC OCEANS

NORTH ATLANTIC OCEAN

By F. A. YOUNG

The weather over the North Atlantic Ocean during January presented some unusual features. Gales were comparatively rare west of the fortieth meridian, as they were not reported on more than three days in any 5° square in that region. On the other hand, the number of days on which they occurred over the eastern section of the steamer lanes was considerably above the normal and exceptionally severe and protracted disturbances prevailed during the second and third decades of the month.

According to press reports, the Dutch S. S. *Veendam* arrived in Halifax, Nova Scotia, on February 5, three days overdue, having encountered on January 30, what Capt. R. W. Braun described as a hurricane, and one of the worst he ever experienced. The vessel was subjected to considerable damage, and two passengers, as well as five members of the crew were injured.

As shown in Table 1, large negative pressure departures still prevailed at the three land stations on the British Isles, the pressure at Lerwick and Valencia remaining below normal during nearly the entire month, while at London barometric readings ranging from 30.28 to 30.01 were reported during the period from the 16th to 22d.

The number of days on which fog was reported in different localities was as follows: Along the American coast between the thirtieth and forty-fifth parallels, from 5 to 8 days; over the Grand Banks, from 6 to 7 days; in the Gulf of Mexico from 1 to 4 days. The steamer lanes east of the fortieth meridian were unusually free from fog, as it was not reported on more than 2 days in any 5° square in that region.

TABLE 1.—*Averages, departures, and extremes of atmospheric pressure at sea level, 8 a. m. (seventy-fifth meridian), North Atlantic Ocean, January, 1930*

Stations	Average pressure	Departure	Highest	Date	Lowest	Date
	Inches	*Inch*	*Inches*		*Inches*	
Julianehaab, Greenland	29.29	(1)	29.96	15th	28.51	21st.
Belle Isle, Newfoundland	29.93	[2] +0.13	30.50	12th	29.16	16th.
Halifax, Nova Scotia	30.21	[2] +0.23	30.88	12th	29.62	29th.
Nantucket	30.23	[3] +0.18	30.72	5th	29.78	15th.[4]
Hatteras	30.21	[3] +0.07	30.68	5th	29.68	30th.
Key West	30.11	[3] 0.00	30.24	4th [4]	29.96	16th.[4]
New Orleans	30.21	[3] +0.05	30.62	4th	29.86	14th.
Cape Gracias, Nicaragua	29.95	[2] −0.03	29.98	4th [4]	29.90	2d.[4]
Turks Island	30.16	[2] +0.11	30.24	19th [4]	30.06	8th.
Bermuda	30.25	[3] +0.09	30.48	2d [4]	29.92	31st.
Horta, Azores	30.25	[2] +0.15	30.62	1st	29.88	15th.
Lerwick, Shetland Islands	29.37	[2] −0.33	30.19	16th	28.48	12th.
Valencia, Ireland	29.53	[2] −0.37	29.91	2d	28.49	31st.
London	29.78	[2] −0.22	30.28	16th	29.14	11th.

[1] No normal available.
[2] From normals shown on Hydrographic Office pilot charts, based on observations at Greenwich mean noon, or 7 a. m., seventy-fifth meridian time.
[3] From normals based on 8 a. m. observations.
[4] And on other date or dates.

From the 2d to 8th, moderate to whole gales occurred over the eastern section of the steamer lanes, and during the same period winds of force 7 and 8 were reported by a